



DECEMBER 1988

WASHINGTON
STATISTICAL
SOCIETY

NEWSLETTER

Dec. 1	Thursday	Evaluation of a Multiple Frame Multivariate Sample Design
Dec. 6	Tuesday	An Exploration of Methodologies for Improving Response Experience in Household Surveys, Part I: Household Nonresponse Avoidance in the Survey of Income and Program Participation
Dec. 7	Wednesday	Robust Designs for Misspecified Logistic Regression
Dec. 16	Friday	Orthogonal Distance Regression
Dec. 20	Tuesday	An Application of Economics to the Problem of Respondent Burden in Economic Surveys
Jan. 19	Thursday	High Response Error and Poor Coverage are Severely Hurting the Value of Household Survey Data

ANNOUNCEMENTS

Seminar Series on Methodologies to Improve Response Experience in Household Surveys

Response to an earlier notice in the WSS Newsletter on "How Do You Improve Your Response Rates?" has generated development of a series of seminars to address this and related topics. The response experience of several major household surveys will be reviewed, with emphasis placed on discussion of methodologies and innovations to maintain and improve response rates. Alternative strategies for improving respondent cooperation will also be explored. Each of the sessions will consist of a presentation followed by ample time for discussion among audience members, presenters, chairpersons, and discussion facilitators. The goal is to provide a forum for an exchange of information, experience, and ideas.

A series of 3 or 4 seminars during the next 5 months is planned. The first seminar is scheduled for Tuesday, December 6, at 12:30 p.m. in the USDA South Building. The topic is "Household Nonresponse Avoidance in the Survey of Income and Program Participation." (See the Program Abstracts section for details.) The second seminar is tentatively planned for late January and will describe experimentation with diary and interview methodologies to enhance response in the Consumer Expenditure Survey.

This seminar series is being co-sponsored by the National Agricultural Statistics Service and the Human Nutrition Information Service of the U.S. Department of Agriculture, in cooperation with the Methodology and Social and Demographic Statistics Sections of WSS.

WASHINGTON STATISTICAL SOCIETY PROGRAM CHAIRS

Agriculture & Natural Resources

Ron Bosecker 447-3895
W. Barnes Johnson 249-7388

Social & Demographic Statistics

Harvey Schwartz 535-0634
John Czajka 484-9220

Short Courses

Glenn White 763-4138
Donald Gantz 425-3931
Brad Pafford 447-2129
Sid Schwartz 268-3490
Virginia deWolf 366-5372

Economics

Francis X. Diebold 452-2461
Gerald Schluter 786-1785

Public Health & Biostatistics

Ed Lakatos 496-5905
Jai Choi 436-7047

Methodology

David Marker 251-4398
Myron Katzoff 436-7047

Employment

Evelyn R. Kay 337-8418

Physical Sciences & Engineering

Patricia Abel 883-6490
Refk Soyer 994-6794

Statistical Computing

Khalid Aboura 994-7534
Sylvia Leaver 272-2311

Quality Assurance

Stanley R. Freedman 586-2038
John M. Galvin 272-2385

Newsletter Editor

Michael Cohen 454-6193

PROGRAM ABSTRACTS

TOPIC: EVALUATION OF A MULTIPLE FRAME MULTIVARIATE SAMPLE DESIGN

SPEAKER: Robert Battaglia, State Statistician, New Jersey

CHAIR: Barry Ford, Sample Design Section, National Agricultural Statistics Service

DATE & TIME: Thursday, December 1, 1988, 12:30 p.m.

LOCATION: Room 3109-S, South Agriculture Building, 12th and Independence, S.W., Washington, D.C.

SPONSOR: Agricultural and Natural Resources

ABSTRACT: Multiple frame estimates from two agricultural surveys were evaluated by comparing sample allocations and sampling errors against a multivariate optimal allocation following the surveys. Optimal samples were computed for each state based on up to ten major agricultural commodities. Results were useful for sample allocations among states and strata within states, removal of ineffective strata, and determination of necessary sample sizes or other adjustments in the two frames in order to meet desired levels of precision.

TOPIC: AN EXPLORATION OF METHODOLOGIES FOR IMPROVING RESPONSE EXPERIENCE IN HOUSEHOLD SURVEYS, PART I: HOUSEHOLD NONRESPONSE AVOIDANCE IN THE SURVEY OF INCOME AND PROGRAM PARTICIPATION

SPEAKERS: Philip Gbur and Dawn Nelson, U.S. Census Bureau

CHAIR: Harvey Schwartz, Applied Management Sciences, Inc.

ORGANIZERS: Diane Willimack, National Agricultural Statistics Service, USDA and Mary Hama, Human Nutrition Information Service, USDA

DATE & TIME: Tuesday, December 6, 1988, 12:30 p.m. to 2:00 p.m.

LOCATION: Room 1333, South Agriculture Bldg., 12th and Independence Ave., S.W., Washington, D.C. (Smithsonian Metro - Independence Ave. exit). Enter bldg. at Wing 1 or 4. Those without government photo ID must sign in at guard desk.

SPONSOR: National Agricultural Statistics Service and Human Nutrition Information Service, U.S. Department of Agriculture, and Methodology and Social and Demographic Statistics Sections, WSS

ABSTRACT: Household nonresponse is a major concern for all demographic surveys at the Census Bureau but is of particular concern for the Survey of Income and Program Participation (SIPP) due to its longitudinal design. This presentation will describe the various approaches currently used by the SIPP interviewers to reduce nonresponse. In an effort to evaluate another approach, an experiment was conducted in which token gifts were presented to respondents. The design of this experiment and preliminary results will also be discussed.

NOTE

See WSS Calendar for details on two newly scheduled talks:
Wednesday, December 7: **Time Series Models for Count Data**
Thursday, December 8: **Software Quality and Process Improvement**

PROGRAM ABSTRACTS (continued)

TOPIC: ROBUST DESIGNS FOR MISSPECIFIED LOGISTIC REGRESSION

SPEAKER: Paul Smith, University of Maryland

CHAIR: Richard Stein, Statistical Evaluation and Research Branch, FDA

DATE & TIME: Wednesday, December 7, 1988, 12:00 p.m. (Note special time.)

LOCATION: Conference Room G, 3rd floor, B wing, Parklawn Bldg., 5600 Fisher Lane, Rockville, MD

SPONSOR: Biometrics Section

ABSTRACT: The logistic model for dose response data states that at dosage x

$$\text{logit } [P(\text{response} | x)] = a + bx.$$

The model is popular both because it appears to fit observed data and because its parameters are interpretable: $\exp(a)$ is the baseline odds in favor of response, and a unit increase in x increases the odds by factor $\exp(b)$. The parameters are usually estimated by the method of maximum likelihood.

The misspecification model is

$$\text{logit } [P(\text{response} | x)] = a + bx + cg(x)$$

where $g(x)$ is a nonlinear perturbation. The misspecification biases the estimates, and the goal of this study is to identify designs which control the effect of bias when the parameter c is small. The first problem is to approximate the bias and mean squared error when c is small and the sample size is large. The design problem is then to choose dosages x to minimize the mean squared error. This is carried out in two steps: first, the least favorable contamination function g is identified, and secondly, the optimal design for this choice of g is constructed.

Finally, it is shown that tests of misspecification are not very powerful, so that experimenters are unlikely to be able to recognize departures from the logistic regression model in practice. This finding underscores the need for robust designs. The results are illustrated by a simple numerical example.

TOPIC: ORTHOGONAL DISTANCE REGRESSION

SPEAKER: Paul Boggs, National Institute of Standards and Technology

CHAIR: Sylvia Leaver, U.S. Bureau of Labor Statistics

DISCUSSANT: John Herbert, U.S. Energy Information Administration

DATE & TIME: Friday, December 16, 1988, 12:30 to 2:00 p.m.

LOCATION: GAO Building, Room 2734, 441 G Street, N.W., Washington, D.C. 20212
(Please call 523-1760 at least one day in advance to assure building entrance.)

SPONSOR: Statistical Computing Section

ABSTRACT: This talk will address the general problem of errors in variables in linear regression. We will present a recently published algorithm utilizing orthogonal distance regression for errors in variables analysis. Additionally, simulation results comparing orthogonal distance regression with ordinary least squares will be presented.

PROGRAM ABSTRACTS (continued)

TOPIC: **AN APPLICATION OF ECONOMICS TO THE PROBLEM OF RESPONDENT BURDEN IN ECONOMIC SURVEYS**

SPEAKER: Arnold Reznek, Statistical Research Division, Bureau of the Census

CHAIR: Francis Diebold

DATE & TIME: Tuesday, December 20, 1988, 2:30 to 4:30 p.m. (Note special time.)

LOCATION: Federal Reserve Board, Martin Building, 20th & C Streets, N.W., Room 3317
(Please call 452-2416 at least one day in advance.)

SPONSOR: Economics

ABSTRACT: Many respondents to government economic surveys--business establishments and firms--say that responding to these surveys puts a substantial burden on them, with little or no corresponding benefit. This paper views burden as an economic opportunity cost--actually a type of tax--imposed on the respondents, for the purpose of gaining information that has benefits for the society as a whole. The problem of setting the level of burden is treated as a problem of economic efficiency. This decision is difficult because it is virtually impossible to determine at reasonable cost what the benefits of the information are, and because benefits and costs of government data collection programs (including respondent burden) tend to be separated--not internalized. The problem of deciding how to allocate this burden among respondents is viewed (with some oversimplification) as a problem of equity, or fairness. For this purpose, burden is interpreted as a tax. Examples are given to show that the type(s) of tax(es) imposed depends on the survey design(s). The paper also shows, for stratified sampling, how sample allocation might be altered if respondent burden were explicitly taken into account. The paper concludes by applying the theory to the question of whether survey respondents have a "responsibility" to respond to surveys, and to the issue of voluntary versus mandatory reporting in economic surveys.

TOPIC: **HIGH RESPONSE ERROR AND POOR COVERAGE ARE SEVERELY HURTING THE VALUE OF HOUSEHOLD SURVEY DATA**

SPEAKERS: Donna Kostanich and Gary Shapiro
Statistical Methods Division, Bureau of the Census

CHAIR: Myron Katzoff, ORM, NCHS

DISCUSSANT: Curtis Jacobs, BLS

DATE & TIME: Thursday, January 19, 1989, 12:30 to 2:00 p.m.

LOCATION: Room 2437, GAO Building, Bureau of Labor Statistics, 441 G Street, N.W.
(Please call 523-1760 at least one day in advance to assure building entrance.)

SPONSOR: WSS Methodology Section

ABSTRACT: The speakers will show that both undercoverage and response variance can be quite substantial. For undercoverage they will survey effects as discussed in the literature and then present some speculative examples of effects on published data. For response variance, the speakers will present a simplified model, and show the relationship of bias to various population parameters under the model. They will then give examples of biasing effects.

OTHER ANNOUNCEMENTS

Seminar on Quality in Establishment Surveys

An interagency presentation based on the Federal Committee on Statistical Policy Working Paper 15 will be held Monday, December 5 in the Jefferson Auditorium of the U.S. Department of Agriculture's South Building. The session will begin at 9:00 a.m. and should be finished by 12:30 p.m.

The South Building is located on Independence Avenue, S.W., between 12th and 14th Streets. By Metro, take the 12th and Independence exit at the Smithsonian Station. The Jefferson Auditorium is located along the Independence Avenue side of the building. Visitors should enter at the fourth wing (halfway between 12th and 14th). Individuals without a government photo ID will need to sign in.

GAUSS Users' Group Meeting

GAUSS/Washington, the area GAUSS Users' Group, will meet on December 7 and January 18, both Wednesdays, at 12:30 in Room B-14 of the Economic Research Service at 1301 New York Avenue, N.W. Call Jack Angle at 786-1505 to put your name on list for guard at door. The December meeting will feature Dr. Philip Rosenberg of the National Cancer Institute speaking on "Computing Statistics for Logistic Regression with GAUSS." Drs. Dale Preston and Shalom Wacholder of the National Cancer Institute demonstrated a package written in GAUSS which does GLM estimation in a friendly way at the October meeting.

Statistical Methodology Correspondence Courses

Pro-File Computer Institute has started offering courses in statistical methodology by correspondence. The courses include lecture notes, problems to be solved (with correctives and feedback from the Institute), cassette tapes as needed, and many problems with worked out examples. Two courses are now offering enrollment:

(1) Statistical procedures for monitoring of time-dependent data, including Box-Jenkins methods and non-parametric procedures specifically developed for identifying shifts in data parameters; and

(2) Algorithms for assessment of risk with special applications to cancer testing and identification.

Each course spans a period of eight months; students may proceed at their own pace if more time is needed for working out the application problems. This mode of teaching is designed specifically for those who wish to improve their knowledge of statistics on their own time rather than in a regimented course schedule.

For more information and registration forms, please call Pro-File Computer Institute at 703/938-9239 or write to the Institute at P.O. Box 962, McLean, VA 22101-9998.

Washington Statistical Society Word Find

In the puzzle below are contained the last names of the last 25 Presidents of the Washington Statistical Society Board of Directors. All names are listed in the correct order but they may be shown horizontally, vertically, or on a diagonal. Some may read from right to left instead of left to right. If you need assistance, the names of Washington Statistical Society presidents from 1964-65 up to 1988-89 are listed on the back page of this newsletter.

E	G	D	I	R	D	L	E	A	R	A	C	C	A	V
S	J	R	E	K	Z	T	I	R	P	Z	B	O	T	E
U	D	A	L	G	A	S	T	W	I	R	T	H	N	P
O	K	H	B	I	U	S	R	F	N	I	L	P	A	K
H	D	M	W	I	T	E	P	P	I	N	G	P	Y	E
N	R	I	I	B	N	Q	L	R	B	K	X	G	R	L
E	O	T	R	N	Z	E	L	A	Z	N	O	G	B	L
E	F	S	E	E	D	W	B	V	J	Y	T	K	W	A
R	L	A	L	M	L	L	A	D	N	E	K	R	I	K
G	I	C	R	E	Z	A	I	N	A	M	D	L	O	G
O	G	S	H	X	S	P	N	N	R	F	Q	V	Y	L
R	A	L	I	A	B	S	X	D	D	Z	A	S	L	C
Y	G	S	C	H	N	E	I	D	E	R	M	A	N	I
W	A	K	S	B	E	R	G	N	J	U	H	V	A	M
N	E	L	L	A	X	N	I	E	T	S	D	L	O	G

OTHER ANNOUNCEMENTS (continued)

Spotlight on WSS Board Members

This month's column highlights three women who have each contributed to the success of WSS in unique ways in recent years.

Susan Ellenberg is the WSS coordinator of science fairs. More than that, she was the one who originally suggested that WSS judge local science fairs when she was a Representative-at-Large in 1984-86 and is almost solely responsible for making that program a viable part of the WSS annual program. It has expanded each year in terms of the number of science fairs we can cover and the number of WSS members involved in the judging. Susan is the Chief of the Biostatistics Branch of the AIDS program at the National Institute of Allergy and Infectious Diseases of the National Institutes of Health. In that role, she collaborates on scientific projects with other branches of the AIDS program and serves as liaison with statistical contractors and other statistical groups. She formerly was a statistician at the National Cancer Institute. She has an A.B. from Radcliffe College and a Ph.D. in mathematical statistics from George Washington University. Her professional specialties are design and analysis of clinical trials and the development of optimal strategies for treatment evaluation. She has published in many journals, including the *New England Journal of Medicine*. Other present professional activities include serving as the ENAR representative to the ASA Board of Directors, Secretary of the ASA Biometrics Section, and the ASA coordinator for International Science and Engineering Fairs.

Evelyn Kay did not originate her own special program but for the past 12 years she has diligently served as the WSS Employment Chair. That activity has brought her into contact monthly with a wide variety of employers and prospective employees. She utilized that background to serve ASA as the Coordinator of Placement Services for annual meetings in Washington and San Diego. She also was in charge of arrangements for two WSS annual dinners and coordinated and chaired a session on telephone response rates. Although retired from Federal Government service, Lynn is an associate in manpower statistics with Economic Associates, Inc., and serves as a volunteer teaching assistant in the ceramics program at George Washington University. Her Federal Government career included assignments

in the Bureau of Labor Statistics Foreign Labor Conditions and Manpower Divisions and was capped by her work as Chief of the Branch of Vocational and Adult Education in the National Center for Education Statistics. Publications included several "How To" statistical guides for developing countries and she provided technical assistance of statistical procedures to Central American countries and Puerto Rico in addition to technical training for visiting foreign statisticians. Lynn currently also finds time for volunteer assistance to the Red Cross and CARE.

Julia Oliver has been known for her wide variety of positions within WSS rather than specializing in only one. She has served as the Public Health and Biostatistics Chair, Publicity Committee Chair, the Newsletter Editor, and presently as a cochair of the Social Committee. She also is a member of the WSS Local Arrangements Committee for ASA 150. Julia has helped with a number of our annual dinners, with the arrangements for the visiting statisticians from the Peoples Republic of China in 1981, and was the hostess of a very successful American pot luck dinner for those visitors. Julia is a survey statistician with the Energy Information Administration and serves as the Program Manager for the Nonresidential Building Energy Consumption Survey within the Office of Energy Marketing and End Use of the Energy End Use Division. She has overall responsibility for the survey, including liaison contacts with the public and with trade associations. Earlier career assignments were at the Food and Drug Administration and five years with the National Center for Health Statistics. Most of all her assignments have involved design and implementation of larger-scale surveys and she describes herself as a "logistician." Her key professional interests are in nonresponse followups and communications of technical survey details to very heterogeneous populations of respondents. One special professional assignment was consultation with the Korean government on the design of their Commercial Building Energy Survey. Julia is surely our only present board member who is an active member of the American Society of Heating, Refrigeration, and Air Conditioning Engineers, serving on one of that society's technical committees. She enjoys sailing and travelling whenever possible.

OTHER ANNOUNCEMENTS (continued)

Answers to WSS Trivia Quiz

1. The Washington Statistical Society was founded in 1926 but did not apply for recognition as a chapter of the American Statistical Association for several years. WSS was accepted as a Chapter of ASA in 1935. However, some claims can be made for the first origins starting in 1896 when the first statistical meetings held outside of Boston were held in Washington, D.C.
2. A total of seven persons have served both as President of the Washington Statistical Society and the American Statistical Association. Those individuals and their terms of WSS and ASA office were:

	<u>WSS</u>	<u>ASA</u>
E. Dana Durand	1934-35	1915
William Leonard	1941-42	1957
Morris H. Hansen	1944-45	1960
A. Ross Eckler	1948-49	1969
Jerome Cornfield	1949-50	1974
Margaret E. Martin	1957-58	1980
Barbara A. Bailar	1977-78	1987

3. According to the American Statistical Association 1987 Survey of Chapter Activities, the best estimate of reported members in all chapters is 11,106. The Washington Statistical Society reported figure was 1,500 or 13.5 percent. However, that is a misleading statistic since a number of people have membership in more than one chapter and are counted multiple times.
4. Although the Washington Statistical Society has had an Employment Column for 21 years, the only chairs of that committee have been Marie Eldridge and Evelyn Kay.
5. Bennie Clemmer is currently in his 9th year as Treasurer of the Washington Statistical Society. Al Mindlin served eight years as Secretary/Treasurer and also served as President of the Society. Since the terms of office for Secretary and Treasurer have been changed in recent years to two-year terms, Al actually participated in more elections than did Bennie. While Charley Jones has remained an active WSS supporter, he served only two terms as Secretary-Treasurer.
6. Through 1988, American University had selected 26 students for the Washington Statistical Society Outstanding Graduate Student Award, the

University of Maryland 25, George Washington University 23, and Howard University 22.

WSS Logic Puzzle

Five WSS Board members are sitting together at a meeting. Each represents a different agency and scholastic background. From the information presented below, who attended Iowa University and from which agency is the President? (Note: Any similarity between actual present Board members and this puzzle is purely coincidental.) Solution next month.

1. The Secretary is from Agriculture.
2. The officer from BLS attended Furman.
3. The Treasurer is sitting on the left.
4. The person from Howard University is sitting next to the President.
5. The person from Kansas is seated next to the Treasurer.
6. The Representative-at-Large has never lived in the midwest.
7. The person from DOD is sitting to the right (your right) of the person from Agriculture.
8. The officer from Howard University works for the Department of Defense.
9. The person on the right graduated from George Washington University.
10. The President is not from Department of Energy.
11. The Vice President is seated in the middle of the group and attended a university in the District of Columbia.
12. The Census representative is the Representative-at-Large.

Short Course: Analysis of Binary Data

Sheila Edwards, ASA Manager of Continuing Education-Grants and Contracts, is pleased to announce that Sir David R. Cox and Joyce Snell will present a two-day short course on the "Analysis of Binary Data" at the August 1989 Sesquicentennial Annual Joint Statistical Meeting in Washington, D.C. The course will be based on the revised edition of Professor Cox's book which will be published in July 1989. Contact the ASA Continuing Education Program for registration details.

OTHER ANNOUNCEMENTS (continued)

Science Fairs 1989

Volunteers are now being solicited to represent the Washington Statistical Society as judges in local area science fairs next Spring. For the past several years, WSS has provided special awards at these fairs to students whose projects demonstrate excellence in statistical theory or application. Those who have participated in this activity have very much enjoyed the opportunity to interact with these students and to observe the widely diverse projects which are presented. The WSS sponsors awards at fairs in Northern Virginia, suburban Maryland, and the District of Columbia. The fairs are held on Saturday mornings in mid- to late March and early April. The only time required is one Saturday morning, plus one weekday lunchtime meeting to discuss judging strategy and to distribute the awards to be given out at each fair.

If you would like to be a WSS science fair judge, or if you would like additional information about this activity, please contact Susan Ellenberg at 301/496-0694; or send a note with your name, address and daytime telephone number to Susan Ellenberg, AIDS Program, NIAID, 6003 Executive Boulevard, Rockville, MD 20892.

Sesquicentennial Souvenirs

Several souvenir items commemorating the ASA-150 celebration were available at the New Orleans annual meetings and a few more are planned for 1989. The Biopharmaceutical Section had very impressive canvas portfolios and gym bags for a donation of \$10 each which are expected to be repeated next year. The Council of Chapters had a nice looking Shaeffer ball

point pen for \$3 and foam beverage can holders (Koozies). A supply of these two items has been procured for WSS and will be offered at the annual holiday party in December. A new WSS mug commemorating the ASA-150 celebration will also be available at that party.

Some souvenir items for next year are pending and may depend upon having enough preorders. An appropriately inscribed striped tie (in both men's and women's versions) is being pursued along with an inscribed clipboard which has a calculator built in. These items would probably need to sell for about \$17 each so you can see the reason for judging interest through presell activities.

A prototype of an extremely handsome lapel pin was presented to the ASA Board at New Orleans. Something of that nature may be included in the registration next year as a permanent memento.

Census Bureau's Fifth Annual Research Conference Announced

The Census Bureau's Fifth Annual Research Conference (ARC V) will be held March 19-22, 1989, at the National Clarion Hotel in Arlington, Virginia, only one-half mile from National Airport and three blocks from Metro. ARC V will comprise a mix of topics such as nonsampling errors, new techniques in questionnaire design, analysis of complex survey data, and geographic systems. For further information, contact Ms. Maxine Anderson-Brown, ARC Conference Coordinator, Office of the Director, Bureau of the Census, Washington, D.C. 20233, 301/763-1150.

EMPLOYMENT COLUMN

The Washington Statistical Society Newsletter provides a service of notification of employment opportunities and descriptions of those seeking employment here in Washington. Evelyn Kay, who is in charge of this service, has achieved a high success rate. Readers are encouraged to take advantage of this feature of the newsletter. Deadline for inserting notices is 5 (five) weeks before the publication date. Those interested should write to: Evelyn R. Kay, 2510 Virginia Avenue, N.W., #709, Washington, D.C. 20037, Phone 337-8418.

JOB OPENINGS

MATHEMATICAL STATISTICIANS

The Agriculture Division of the Census Bureau anticipates that a first level supervisory mathematical statistician (GH13/1529) in the Research and Methods Branch will be announced soon. The activities of the branch include census and survey sample design and estimation, variance estimation, nonresponse sample design and estimation, edit and item imputation, disclosure avoidance for tabulations, discriminant analysis, general survey research, and other statistical evaluation and research for the census of agriculture and agricultural surveys. A master's degree in statistics or equivalent qualifications and a minimum of three years of work experience is required.

Send resume and SF-171 to: Ann Vacca, Bureau of the Census, Washington, D.C. 20233, 301/763-1087.

RESEARCH ASSOCIATES AND STUDY DIRECTOR

The NATIONAL RESEARCH COUNCIL--NATIONAL ACADEMY OF SCIENCES has immediate openings for Research Associates and a Study Director to assist the Committee on National Statistics and its panels of experts in reviewing federal data collection programs. Research Associates would work on studies of the decennial census, surveys of income, modeling of social welfare programs, quality of medical lab tests, confidentiality of data, and statistics on disabilities and on foreign trade. Study Director would work with panels of experts on evaluation of quality of U.S. foreign trade statistics. Study Director requires a Ph.D. or equivalent in statistics, economics, or related science with training in survey methodology or international trade plus four or more years relevant experience. Research Associates require a Ph.D. or equivalent in statistics or related science with training in quantitative methods. All positions require demonstrated abilities to organize and conduct or assist in research, to communicate clearly, and to interact effectively with senior scientists in a team effort. Full-time or part-time positions are available.

Send resume with names of three references to Director, Committee on National Statistics, National Research Council, 2101 Constitution Ave., N.W., Washington, D.C. 20418. An Equal Opportunity Employer.

EMPLOYMENT COLUMN (continued)

FACULTY POSITIONS

The Department of Statistics/Computer & Information Systems at the George Washington University has an opening for an Assistant Professor, tenure accruing, in the area of computer science or statistical computing, beginning Fall 1989. The position requires a Ph.D. in the relevant area. Applicants should have a strong commitment to both teaching and research in computer science or statistical computing. Applicants from all areas of computer science are invited; an interest in the interface between computer science and statistics is desirable.

The Department has approximately 70 undergraduate majors, the majority in Computer & Information Systems. In addition, the Department offers a masters degree in statistical computing and masters and doctoral degrees in Statistics.

Candidates should send applications including curriculum vitae, relevant reprints and three letters of reference to Professor R. Smythe, Chairman, Department of Statistics/Computer & Information Systems, The George Washington University, Washington, D.C. 20052. Applications must be received by February 15, 1989. EO/AA

SENIOR STATISTICIAN

Systems Applications provide the U.S. Environmental Protection Agency and other governmental and industrial organizations with consulting services related to air and water pollution. The Environmental Statistics group performs data analyses which typically require originality and ingenuity and offer the opportunity for professional growth. Data analytic responsibilities are of both a confirmatory and exploratory nature. Thus, imaginative approaches to probing and presenting data are sought. Conscientiousness concerning the accuracy, appropriateness, and timeliness of results is essential. Depending on qualifications and interests, the individual may be given major responsibility for selected statistical projects and may participate in marketing activities.

At least one year of statistical consulting, especially in the environmental field, is preferred as well as a Ph.D. degree in statistics or equivalent. In addition to statistical expertise, candidates should possess the oral and written communication skills needed to present results clearly to clients. Ability to program in Fortran, SAS, Minitab, BMDP, and/or other statistical packages required.

To apply, send resume to Job#4-P-89 to Systems Applications, Inc., 101 Lucas Valley Road, San Rafael, CA 94903. Indicate on resume or cover letter your salary expectations and the referral source. EO/AA

EMPLOYMENT COLUMN (continued)

SENIOR RESEARCH ASSOCIATE

Application Deadline: December 31, 1988; **Position to be filled by:** March 15, 1989

A research and managerial position on the Panel Study of Income Dynamics, Survey Research Center, Institute for Social Research, University of Michigan, to (1) perform responsible administrative work, including supervision of data processing support staff, planning and implementing procedures and timetables for the performance of work, assisting in the recruitment and evaluation of support staff; (2) plan, develop and implement experimental methodological projects on survey research techniques and procedures; (3) create statistical programs to prepare survey data and documentation for analysis, and collaborate with staff in analyzing and reporting on the data.

Required Qualifications: Master's degree in sociology, economics, or a related social science, or an equivalent combination of graduate study and work experience; two or more years of progressively responsible experience in the conduct and management of social science research; two or more years' experience in supervising and evaluating research support staff; knowledge of and experience with OSIRIS preferred; knowledge of and experience with survey data coding, editing, tape and documentation production.

RESEARCH INVESTIGATOR

Application Deadline: March 15, 1989; **Position to be filled by:** Summer 1989

A non tenure-track position on the Panel Study of Income Dynamics, Survey Research Center, Institute for Social Research, University of Michigan, to perform primary research functions including (1) develop and write research proposals; (2) develop and oversee procedures for coding, programming, and publishing complex data on family histories, relationships and economic events; (3) collaborate with PSID staff to analyze data and write-up results for publication in articles and reports.

Required Qualifications: Two or more years' work experience with large, longitudinal data sets, such as SIPP, PSID, National Longitudinal Studies, etc.; a Ph.D. in sociology, economics or a related social science, or an equivalent combination of graduate study and work experience; knowledge of the literature in economics or other social science field, and in demography; two or more years' experience in programming and statistical analysis of survey research data.

To apply for either position, send application letter, resume, and three references to:

Mary Wreford, 3205 ISR, P. O. Box 1248, Ann Arbor, MI 48106. EO/AA

JOB OPENINGS (continued)

The Economic Analysis Group of the Antitrust Division (U.S. Dept. of Justice) has an opening for a Statistician. We are interested in considering candidates having or anticipating a Ph.D. in statistics. Responsibilities would include working with attorneys and economists in developing statistical evidence, statistical testimony, and damage estimates for trials and administrative proceedings. The position requires an ability to analyze large amounts of data and to explain clearly complex statistical problems to non-specialist audiences. Expertise in sampling techniques is also required. Grade and salary will be commensurate with qualifications. All applicants must be U.S. citizens. Interested persons should send a curriculum vitae and should arrange for three letters of recommendation and transcripts to be sent. An equal opportunity/affirmative action employer. Contact: Dr. Andrew S. Joskow, Director of Analytical Resources, Economic Analysis Group, Anti-Trust Division, Room 11-453, 555 4th St., N.W., Washington, D.C. 20001.

PROFESSOR OF STATISTICS/BIostatISTICS **The George Washington University**

The Department of Statistics/Computer and Information Systems, in conjunction with its research facility, the Biostatistics Center, is recruiting a full professor with tenure or tenure accruing, starting in the Fall of 1989. The position will be funded on a nine to twelve month basis jointly by academic funds from the University and by sponsored research funds from the Biostatistics Center. The Department offers a broad curriculum leading to advanced degrees in statistics, and the Biostatistics Center serves as the Coordinating Center for over 12 cooperative studies and engages in statistical methodological research. The position involves teaching (at reduced effort), doctoral student supervision, and serving as a senior statistical advisor on methodologic issues for ongoing medical research projects. A strong record of research in statistical theory and methods related to biostatistical applications is required. Salary will be commensurate with experience and past performance. Please send a resume and three letters of reference to: Dr. John M. Lachin, Director, The Biostatistics Center, 6110 Executive Blvd., Suite 750, Rockville, Md. 20852. Applications will be accepted until February 1, 1989. It is anticipated that funding will be available effective July 1, 1989. EOE.

PRESIDENTS OF THE WASHINGTON STATISTICAL SOCIETY**1964 - 1989**

<u>Year</u>	<u>Person</u>	<u>Year</u>	<u>Person</u>
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